

# Hong Kong Community College

## SEHH2239 Data Structures Semester Two, 2021/2022

### Tentative Teaching Plan

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#### Subject Leader

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#### Subject Lecturer/ Lecturers

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#### Pre-requisite

SEHH2042 Computer Programming

#### Objectives

This subject aims to equip students with basic concepts of data structures and algorithms. It provides students with an understanding to apply simple data structures and algorithms in developing computer programs with a high-level programming language.

## **Subject Intended Learning Outcomes**

Upon completion of this subject, students will be able to:

- describe the properties of basic data structures.
- identify the strengths and weaknesses of different data structures.
- apply the knowledge of various common algorithms.
- design and employ appropriate data structures and algorithms for developing computer applications using a high-level language, such as Java.
- examine the data structures and algorithms for the improvement in the solutions.

## **Respective Scheme/Programme Intended Learning Outcomes**

This subject contributes to the respective Scheme/Programme Intended Learning Outcomes in the following way:

(1) For students taking this subject as a General Education subject or elective Discipline-specific subject, please refer to your scheme/programme requirement document for the Scheme/Programme Intended Learning Outcomes.

(2) For students of Associate in Information Technology –  
(Row extracted from the Curriculum Map of Associate in Information Technology)

Subject Code	Subject Title	S-ILO-1 IT and Quantitative Skills	S-ILO-2 Critical Thinking	S-ILO-3 Problem Solving Skills	S-ILO-4 Communication	S-ILO-5 Ethics and Professional Attitude	S-ILO-6 Broadening	IT-P-ILO-1 Application of IT Knowledge	IT-P-ILO-2 Designing and Developing IT Systems	IT-P-ILO-3 Recognising IT Opportunities and Constraints
SEHH2239	Data Structures	R, A		I, A				R		R, A

\* Please refer to your scheme/programme document for the full version of the Outcome Statements.

I: The learning leading to the particular outcome is introduced in that subject

R: The learning leading to the particular outcome is reinforced in that subject

A: The learning leading to the particular outcome is assessed in that subject

## **Teaching and Learning Approach**

Please refer to the Subject Description Form.

## Weekly Teaching Pattern

2 hour(s) of lecture

1 hour(s) of tutorial

## Tentative Teaching Schedule

Lecture			Tutorial		
No	Content	Remarks	No	Content	Remarks
1	Python Basics	Textbook – Drozdek Ch1	1	Python Basics	
2	Class and Object	Textbook – Drozdek Ch1	2	Class and Object	
3	Performance Analysis	Textbook – Drozdek Ch2	3	Performance Analysis	
4	Sorting I	Textbook – Drozdek Ch5, Ch9	4	Common sorting algorithms: bubble sort, insertion sort, selection sort;	<b>Introduce Assignment 1</b>
5	Sorting II	Textbook – Drozdek Ch9	5	Optimal-time sorting algorithms: quick sort, merge sort	
6	Linear List	Textbook – Drozdek Ch3	6	Linear List	
7	Stack and Queue	Textbook – Drozdek Ch4	7	Stack	<b>Assignment 1 due</b>
8	Mid-term	Lecture 1-6 <b>Week 8 Tentative</b>	8	Queue	
9	Tree I	Textbook – Drozdek Ch6	9	Tree I	<b>Introduce Assignment 2</b>
10	Tree II	Textbook – Drozdek Ch6	10	Tree II	

11	Heap and Heap Sort	Textbook – Drozdek Ch7	11	Heaps and Heap Sort	
12	Hashing	Textbook – Drozdek Ch10	12	Hashing	<b>Assignment 2 due</b>
13	Looking forward		13	<b>Revision</b>	

This schedule is subject to change.

### **Assessment Weighting**

Continuous Assessment:	60%
Examination:	<u>40%</u>
	100%

### **Assessment Methods for Continuous Assessment**

<u>Continuous Assessment</u>	<u>Percentage</u>	<u>Brief Description</u>
Test	40%	Test on Lecture 1 – 6, Tutorial 1 - 6
Assignment 1	30% (individual)	Assignment on Lecture 1 - 6
Assignment 2	<u>30%</u> (individual)	Assignment on Lecture 7-11
	100%	

### **Attendance and other rules / regulations**

The attendance requirement and all other rules and regulations in the HKCC Student Handbook and in the respective Programme Document apply. Please refer to these documents for details.

For the attendance requirement, please note that sick leave and approved leave of absence shall be counted as absence in the calculation of attendance. However, sick leave and approved leave of absence may be taken into consideration in cases of insufficient attendance.

### **Lecture/Tutorial Notes and Assignments**

Students are required to download lecture/tutorial notes and assignments from the Moodle e-learning system.

### **Text and References**

#### ***Recommended Textbook:***

[1] Drozdek, A. (2021). *Data Structures and Algorithms in Python*. (1<sup>st</sup> ed.), Cengage Learning.

#### ***References:***

[2] Drozdek, A. (2013). *Data Structures and Algorithms in Java*. (4<sup>th</sup> ed.), Cengage Learning.

[3] Goodrich, M.T. & Tamassia, R. (2013). *Data Structures and Algorithms in Python*. (1<sup>st</sup> ed.), Wiley.

[4] Padma Reddy, A.M (2019). *Data Structures and Applications: A Simple and Systematic Approach*. (1<sup>st</sup> ed.), Cengage Learning.

[5] Weiss, M. A. (2012). *Data Structures and Algorithm Analysis in Java*. (3<sup>rd</sup> ed.), Pearson Education.

### **Plagiarism**

You are strongly advised to pay attention to the rules and guidance notes regarding plagiarism, how sources should be referred to, and bibliography referencing as stipulated in the Student Handbook.

The College may take disciplinary actions against students when there is evidence of collusion between individuals. The work of others which is included in the assignment must be attributed to its source (a full bibliography and a list of references must be submitted). Failure to observe such requirements may lead to serious consequences for your study in this subject and your registration at the College. Please refer to the Section “Penalties for Offences” in the Student Handbook for details.

You are also strongly advised to review the hot tips about plagiarism and how to avoid it with reference to the following document:  
[http://www.polyu.edu.hk/ogur/academic\\_integrity/Plagiarism\\_Booklet.pdf](http://www.polyu.edu.hk/ogur/academic_integrity/Plagiarism_Booklet.pdf).